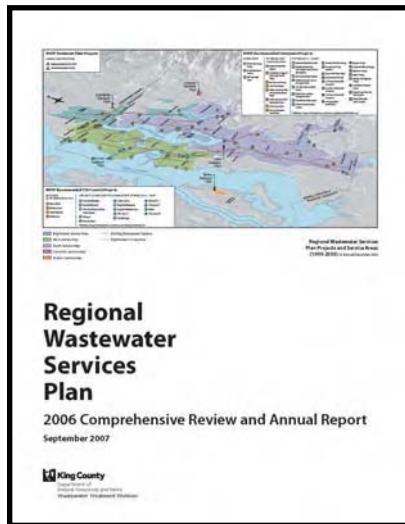


# RWSP 2006 Comprehensive Review and Annual Report

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Metropolitan Water Pollution  
Abatement Advisory Committee  
October 3, 2007



**King County**

Department of Natural Resources and Parks  
**Wastewater Treatment Division**



# Today's Presentation

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- Overview of Report
- Major Findings of Review
- Highlights of RWSP Policy Implementation in 2004-2006
- RWSP Cost Estimates





# Organization of Report

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- Executive Summary
- Introduction
- Chapters on RWSP policy areas (13 sets of policies)
  - Each chapter discusses policy implementation highlights in 2004-2006
  - Some chapters, in accordance with policy guidelines, provide 2006 RWSP Annual Report information
- Appendices
  - A-M: Complete text of RWSP policies with summary information on policy implementation in 2004-2006
  - N: Summary of 2006 Odor Complaints (element of 2006 annual report)
  - O: Water Quality Monitoring Results for 2006 (element of 2006 annual report)
  - P: Robinswood Letter
  - Q: RWSP Project Reports (element of 2006 annual report)




## RWSP Treatment Plant Projects

### UNDER CONSTRUCTION

-  Brightwater Treatment Plant (2010)
-  Carnation Treatment Plant (2008)

## RWSP Recommended Conveyance Projects

### COMPLETED

-  1 North Creek Storage Facility
-  2 Eastside Interceptor Section 1
-  3 Mill Creek Relief Sewer

### IN DESIGN AND CONSTRUCTION

-  1 Bellevue Pump Station Upgrade
-  2 Kent/Auburn Conveyance System Improvement Project
-  3 Black Diamond Storage
-  4 North Creek Pipeline
-  5 Hidden Lake Pump Station and Sewer Improvement Project
-  6 Juanita Bay Pump Station Replacement Project
-  7 Pacific Pump Station
-  8 Fairwood Interceptor Sewer Project

### FUTURE (2012 – 2030)\*

-  1 Bellevue Inflow Trunk Parallel
-  2 Heathfield/Sunset Pump Station Replacement and Force Main Upgrade
-  3 Sammamish Plateau Diversion
-  4 Northwest Lake Sammamish Interceptor Parallel
-  5 Coal Creek Siphon and Trunk Parallel
-  6 North Mercer and Enatai Interceptor Parallels
-  7 Lake Hills Trunk Replacement
-  8 Thornton Creek Interceptor Parallels
-  9 Sammamish Plateau Storage
-  10 Boeing Creek Storage Expansion
-  11 Algonia Pacific Trunk Stage 1
-  12 Richmond Beach Storage
-  13 Soos Pump Station D with Conveyance
-  14 Soos Pump Station H with Conveyance
-  15 Soos Pump Station B with Conveyance
-  16 York Pump Station Modifications
-  17 Issaquah Storage
-  18 Eastgate Parallel Pipe Upgrade
-  19 Blyn Mawr Storage
-  20 Medina Storage
-  21 Issaquah Creek Highlands Storage
-  22 South Renton Interceptor Parallel
-  23 Factoria Pump Station and Trunk Diversion
-  24 Issaquah Interceptor Section 2 Parallel















\* Modifications to changes to future projects may occur based on new information gathered in future years.

## RWSP Recommended CSO Control Projects


### IN DESIGN (TO BE COMPLETED IN 2012)

-  1 Barton Street
-  2 Murray Avenue
-  3 South Magnolia
-  4 North Beach

### PROJECTS SCHEDULED FOR COMPLETION DURING 2015 – 2030\*

-  1 University/Montlake
-  2 Hanford #2/Lander
-  3 West Point Treatment Plant Improvements
-  4 Michigan
-  5 Brandon Street
-  6 Chelan Avenue
-  7 King Street/Kingdom
-  8 Hanford at Rainier Avenue
-  9 8th Avenue S
-  10 West Michigan
-  11 Terminal 115
-  12 3rd Avenue W
-  13 Ballard
-  14 11th Avenue W

\* Modifications or changes to future projects may occur based on new information gathered in future years.

-  Brightwater Service Area
-  West Service Area
-  South Service Area
-  Carnation Service Area
-  Vashon Service Area
-  Existing Wastewater Pipeline
-  Brightwater Conveyance



Department of Natural Resources and Parks  
Wastewater Treatment Division

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Data Sources: Hillshade: King County GIS Center  
File Name: 0708nwplAYOUT.r njb

Figure 1-2.

**Regional Wastewater Services  
Plan Projects and Service Areas  
(1999-2030)** As Revised December 2006



# Major Findings of the Review

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- Projects and programs continue to be implemented in accordance with RWSP policies
  - Treatment plant upgrades and construction on schedule (Brightwater, Vashon, Carnation)
  - Projects are under way to meet RWSP odor control goal
  - Completed plans to reduce I/I, meet conveyance system needs, and control CSOs; implementation is under way
  - Local jurisdictions and communities affected by RWSP projects are involved in planning, design, and mitigation decisions
- No new information or identified needs in 2004-2006 to change key planning assumptions from 2004 RWSP review



# Highlights of RWSP implementation in 2004-2006

## Meeting Treatment Capacity Needs

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- Brightwater Treatment System
  - On schedule for completion in 2010
  - Mitigation agreements negotiated
  - Final design completed
  - Construction under way
- Vashon Treatment Plant Upgrades
  - Completed in fall 2006
  - Included new headworks, an oxidation ditch, two secondary clarifiers, a stormwater detention tank, an administration building, and an electrical building
- Carnation Treatment Plant
  - All permits obtained, final design completed
  - Construction began in 2006
  - Design under way on Chinook Bend Natural Area wetland enhancement discharge





**Brightwater North Mitigation Area**



**Brightwater Treatment Plant Site Preparation**



**Vashon Treatment Plant Upgrades**



**Carnation Treatment Plant Construction**



# Highlights of RWSP implementation in 2004-2006

## Projects to meet odor control goal

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- Phased retrofit of existing plants
  - Improvements to the division channel ventilation system at West Point completed in 2005
  - Modifications to odor scrubber system at West Point completed in early 2007
  - In 2005, completed final design of covers for each first pass of the four aeration basins and of covers for the return activated sludge channel at South Plant
  - Installation of the covers began in 2006 and is expected to be substantially complete by the end of 2007
- Odor and H<sub>2</sub>S Corrosion Control Plan completed in December 2006





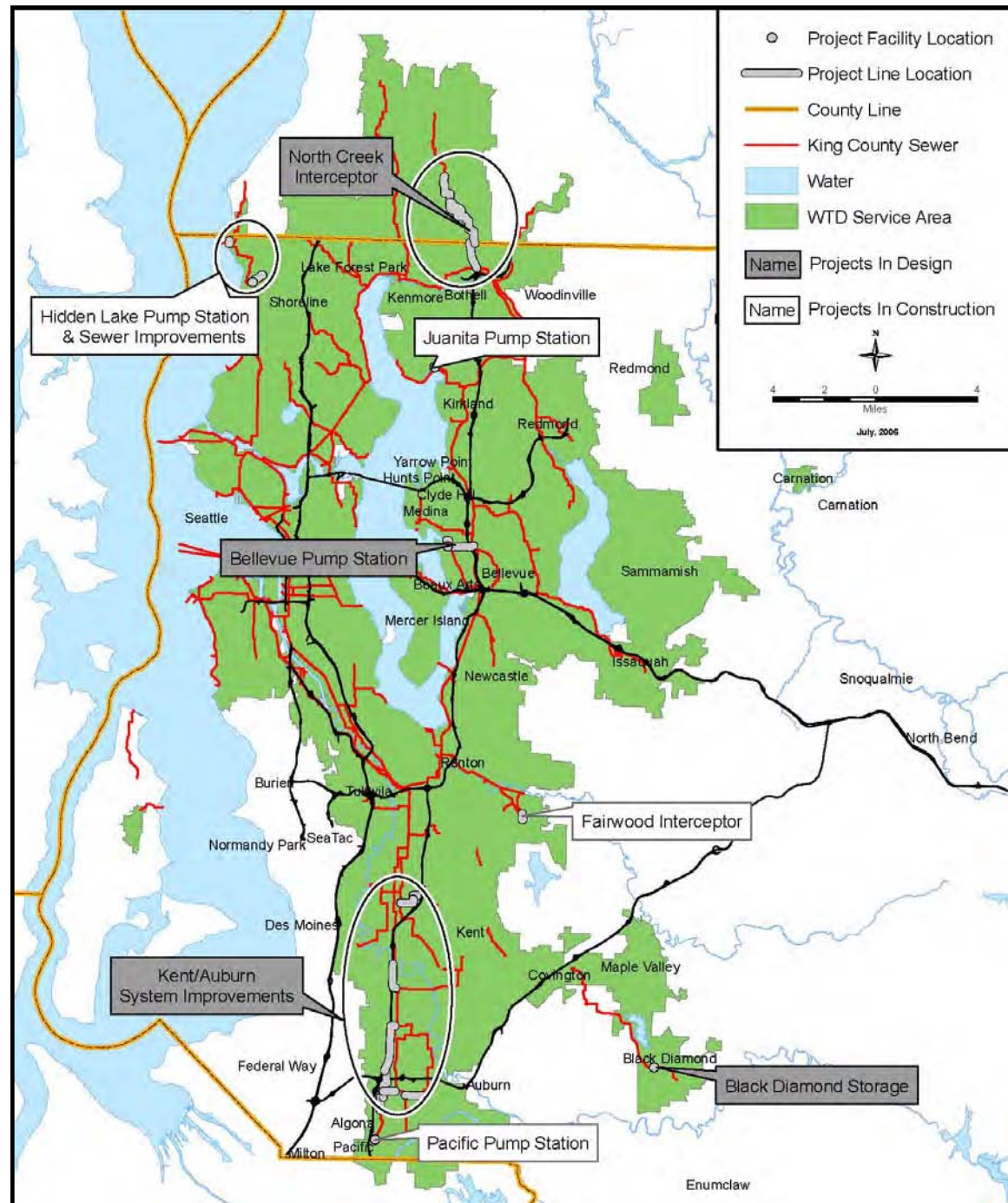
# Highlights of RWSP Implementation in 2004-2006

## Conveyance System Improvements

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- Building Brightwater Conveyance
  - Construction began on the Influent Structure/Influent Pump Station shafts at the North Creek Portal and on tunnel shafts at the North Kenmore Portal
  - Selected a joint venture contractor for West Tunnel
  - Finalized conveyance permits for tunnel construction
- Updating the Conveyance System Improvement Program
  - Identifies regional conveyance improvements necessary to meet the county's 20-year peak flow storm design standard; and
  - Documents why there is a specific conveyance need, what is needed, when, and its estimated cost
- Making Conveyance Improvements
  - 8 projects in design and construction in 2006
  - 2 are now complete: Fairwood Interceptor Sewer and Pacific Pump Station

# RWSP Conveyance Projects in Design or Construction in 2006



Juanita Bay  
Pump Station  
Construction



Pacific Pump Station



North Kenmore Portal Construction



# Highlights of RWSP Implementation in 2004-2006

## Combined Sewer Overflow Control

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- Startup of Mercer/Elliott West CSO and Henderson/Norfolk CSO control systems
- Completed CSO Program Review
- Started planning Puget Sound beach CSO projects





# Highlights of RWSP Implementation in 2004-2006

## Infiltration and Inflow Reduction

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- Completed comprehensive six year study of I/I in service area in 2005
- Developed Recommended I/I Program that was adopted by King County Council in 2006
- Implementation on Recommended Program began in 2006
  - Developed and applied selection criteria for potential I/I initial projects
  - 4 projects selected to undergo further evaluation through SSES work and predesign
  - At end of predesign, WTD will work with MWPAAC to select 2-3 most feasible projects for design and construction



# Highlights of RWSP Implementation in 2004-2006

## Creating Resources from Wastewater

- Biosolids Recycling
  - 100% of biosolids recycled in 2004-2006
  - Consistently meet or exceed state and federal criteria
- Energy Recovery
  - Digester gas is recovered at West Point and South plants to generate electricity and heat for treatment plant processes
  - In 2004-2006, King County sponsored the world's largest digester gas fuel cell demonstration project



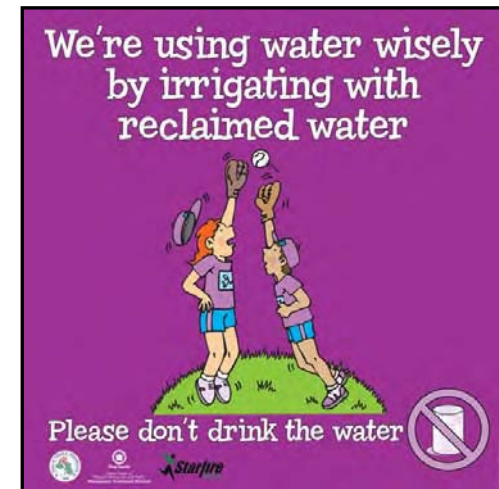
(left to right) no fertilizer, chemical fertilizer, biosolids

# Highlights of RWSP Implementation in 2004-2006

## Creating Resources from Wastewater

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- Producing and Using Reclaimed Water
  - 255 million gallons of reclaimed water produced and used annually
  - Brightwater will be able to provide 7 mgd of reclaimed water in 2011
  - Reclaimed water from the Carnation Treatment Plant will be used to enhance a wetland in the Chinook Bend Natural Area
- Reclaimed Water Feasibility Study
  - Required by RWSP Water Reuse Policy-2
  - Study is under way and will be completed in December 2007





## Highlights of RWSP Implementation in 2004-2006

# Water Quality Management and Protection

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- South and West Point plants received NACWA's Platinum Peak Performance Award for operating five consecutive years with no permit exceptions in 2006
- 27 SSOs in 2006
  - More than half due to severe storm in December and Barton Force Main failure
  - Overflow response procedures implemented in all cases
  - Despite these conditions, neither West Point nor South plant experienced exceptions to NPDES secondary treatment permit limits in 2006



# Highlights of RWSP Implementation in 2004-2006

## Water Quality Management and Protection

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- Trouble Call Program
  - Responded to about 110 in 2004-2006
  - In 2004 and 2005, 9 were WTD-related
  - In 2006, 24 were WTD-related, due to Barton force main breaks and December windstorm
- Water and sediment quality monitoring programs
  - Assess compliance with NPDES permit limits
  - Track water quality trends in water bodies in King County
- Industrial Waste Program
  - 128 permits and 302 industrial waste discharge authorizations in effect in 2006
  - Issued Notices of Violation to 39 companies for 70 violations

# RWSP 2006 Cost Estimates (1999-2030)

RWSP Element	2005 RWSP Cost Estimates (2005\$ x 1M)*	2005 RWSP Cost Estimates (2006\$ x 1M)	2006 RWSP Cost Estimates (2006\$ x 1M)	Cost Change (2006\$ x 1M)
<b>Total RWSP</b>	<b>\$2,950</b>	<b>\$3,039</b>	<b>\$3,137</b>	<b>\$98</b>
<b>Total Brightwater Treatment &amp; Conveyance</b>	<b>\$1,621</b>	<b>\$1,670<sup>a</sup></b>	<b>\$1,664<sup>a</sup></b>	<b>(\$5)</b>
Brightwater Treatment Plant	\$529	\$545 <sup>a</sup>	\$587 <sup>a</sup>	\$43
Brightwater Conveyance	\$853	\$879 <sup>a</sup>	\$835 <sup>a</sup>	(\$43)
Land and Right-of-Way	\$98	\$101 <sup>a</sup>	\$97 <sup>a</sup>	(\$4)
Mitigation	\$141	\$145 <sup>a</sup>	\$145 <sup>a</sup>	(\$1)
<b>Total Treatment &amp; Odor Control Improvements (Non-Brightwater)</b>	<b>\$146</b>	<b>\$150</b>	<b>\$163</b>	<b>\$13</b>
Odor Control at South Plant	\$4	\$5	\$7	\$3
West Point Odor Control	\$1	\$1	\$1	--
West Point Digestion Improvements	\$4	\$4	\$6	\$2
King Street Regulator Odor Control Project	\$1	\$1	\$3	\$2
South Plant Expansion	\$103	\$106	\$106	--
Vashon Treatment Plant Upgrade	\$19	\$20	\$20	--
Carnation Treatment Plant	\$13	\$14	\$19	\$6
<b>Total Conveyance (Non-Brightwater)<sup>b</sup></b>	<b>\$648</b>	<b>\$667</b>	<b>\$754</b>	<b>\$87</b>
Completed CSI projects, acquisitions, and planning			\$143	
CSI projects in design or construction in 2006			\$197	
Planned CSI projects, planning, and reporting			\$414	
<b>Total Infiltration/Inflow (I/I)</b>	<b>\$45</b>	<b>\$46</b>	<b>\$49</b>	<b>\$4</b>
<b>Total Combined Sewer Overflow</b>	<b>\$427</b>	<b>\$440</b>	<b>\$444</b>	<b>\$4</b>
CSO Control Program	\$377 <sup>d</sup>	\$388	\$388 <sup>d</sup>	--
CSO Planning & Updates	\$6	\$6	\$6	--
Sediment Management/Lower Duwamish Superfund	\$44	\$46	\$49	\$4
<b>Total Reclaimed Water</b>	<b>\$35</b>	<b>\$36</b>	<b>\$36</b>	<b>--</b>
Technology Demonstration (completed 2004)	\$1	\$1	\$1	--
Future Water Reuse	\$3	\$3	\$3	--
Water Reuse Satellite Facility (cancelled in 2003)	\$5	\$5	\$5	--
Reclaimed Water Backbone	\$24	\$25	\$25	--
RWSP Water/WW Conservation (completed in 2005)	\$1	\$1	\$1	--
<b>Water Quality Protection (completed in 2006)</b>	<b>\$15</b>	<b>\$16</b>	<b>\$16</b>	<b>--</b>
<b>Habitat Conservation Plan (HCP)/Programmatic Biological Assessment</b>	<b>\$10</b>	<b>\$10</b>	<b>\$8</b>	<b>(\$2)</b>
<b>RWSP Planning and Reporting</b>	<b>\$3</b>	<b>\$3</b>	<b>\$3</b>	<b>--</b>





# Other Areas Covered in Report

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- Sediment Management Activities
  - Sediment Management Plan
  - Work continues on remedial investigation for Lower Duwamish Waterway Superfund site
- Implementation of Environmental Mitigation Policies
  - Issued 28 wastewater-facilities related SEPA documents in 2004-2006
  - Developed mitigation measures with affected communities
- Implementation of Public Involvement Policies
  - Ongoing public information and education programs
  - Activities to engage and inform public, local agencies, and local jurisdictions in decision-making process
- Implementation of Financial Policies
  - Policies guide the establishment of annual sewer rate and capacity charge and commitment to “growth pays for growth”
  - Productivity Initiative Pilot Program developed to identify and implement ways to increase efficiency



## For more information

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Access the RWSP 2006 Comprehensive Review and Annual Report on the Web:

<http://dnr.metrokc.gov/wtd/rwsp/library.htm>

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